WARM–UP PROBLEMS

NEW HAMPSHIRE STATE TEAM
NATIONAL MATHCOUNTS PREPARATION

(1) Express 54_6 in base 12

(2) Find the product of the gcd and lcm of 100 and 28

(3) What is $1000000^2 - 999999^2$

(4) What is the probability of getting at least 5 heads if you flip 6 fair coins?

(5) What is the distance between $(1, 2, 3, 4)$ and $(5, 6, 7, 8)$?

(6) What is the sum of all positive divisor of 1024

(7) A square of area 12 is surrounded by four equilateral triangles, one attached to each edge of the square. What is the sum of the areas of the triangles?

(8) What is the probability that the sum of two standard six sided dice is prime?

(9) Write $.4\overline{63}$ as a common fraction.

(10) Your favorite bakery is having a sale on maple, chocolate, glazed, and jelly doughnuts. In how many ways can you buy a baker's dozen of these flavors?